

**REMARKS**

Claims 1, 3, 5-10, 12 and 14 are presented. Claims 9, 10 and 12 are withdrawn from consideration. Of the claims considered on the merits, 1 and 14 are independent, and the rest are dependent.

In compliance with the requirement in section 2 on page 2 of the outstanding Office action, a new declaration acknowledging the filing of the PCT application is submitted herewith.

Claims 1, 3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuka '329, '870, '192 or '609 in view of Taylor (section 4 of the Office action), Benzinger (section 5 of the Office action), or Casadevall (section 6 of the Office action). Claims 6-8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Franz (section 7 of the Office action) or Burke (section 8 of the Office action) in view of Yuka '329, '870, '192 or '609.

The rejections are respectfully traversed.

Independent claim 1 is directed to a material to be molded comprising a porous material in which a phenolic resin is impregnated. The phenolic resin is a condensating polymer of a phenolic compound and an aldehyde and/or aldehyde donor. Moreover, the phenolic resin is at least partially sulfomethylated and/or sulfimethylated at a time when said phenolic resin is at B-stage. This enhances moldability, storage life, and heat resistance.

Claim 14, the other independent claim considered on the merits, is directed to a material to be molded shaped as a base sheet, an adhesive, and a cured material laminated on the base sheet as a surface layer by means including the adhesive. In accordance with the

invention, a porous material is provided in which a phenolic resin is impregnated. The phenolic resin comprises a condensating polymer of a phenolic compound and an aldehyde and/or aldehyde donor produced using ammonia and/or amine. Moreover, the phenolic resin is at least partially sulfomethylated and/or sulfimethylated at a time when said phenolic resin is at B-stage. This enhances moldability, storage life, and heat resistance.

The invention as defined in the claims is neither disclosed nor suggested by the prior art relied upon.

The Yuka documents disclose sulfomethylated condensation polymers comprising various phenol and aldehyde donors and the curing of aldehyde resins with an amine compound. Taylor discloses that the polymerization of a thermosetting polymer should be advanced to the B-stage and that, in the stage B-stage, the impregnated material can be stored for a reasonable length of time under normal storage conditions (Col. 1, lines 15 to 20).

But in Taylor, thermoplastic resins are impregnated in the textile material (Col. 4, line 52 to 56).

Although Taylor discloses that, in addition to the thermoplastic resins, thermosetting resins such as epoxies, furans, phenolics, polyimides and the like can be employed, Taylor does not teach the reciprocal effect between putting phenolic resin at the B-stage and sulfo- and/or sulfimethylating the phenolic resin. The reciprocal effect may be understood from the comparison between resin E and resin F and the further test results submitted as respective exhibits to amendments dated March 24, 2004, and September 5, 2003, and from Exhibit A submitted herewith.

Exhibit A submitted herewith shows the conditions under which the resin is at the B-

stage. Table 1 of Exhibit A is an array showing heating time in minutes across the top and temperature in degrees C down the left side. The open triangles show conditions under which the resin is at the A-stage and the resin sticks to the mold so that the molded sample is difficult to be released from the mold. The circles show conditions under which the resin is at the B-stage and the molded sample is easily released from the mold without sticking. The solid triangles show conditions under which the resin is already at the C-stage and the nonwoven fabric sample cannot be molded.

The cells denoted by circles mark the limits of the desirable window. That window is wider in a material conforming to the present invention than in a material not conforming to the present invention in respect of sulfo- and/or sulfimethylation by four cells to three after heating for one minute, by four cells to two after heating for five minutes, by two cells to one after heating for 60 minutes, and by one cell to none after heating for 180 minutes.

There is a remarkable reciprocal relation between putting a phenolic resin at the B-stage and sulfo- and/or sulfimethylating the resin. The relation disclosed in the application and illustrated by the test results of Exhibit A submitted herewith demonstrates the importance of sulfo- and/or sulfimethylation at the B stage.

A material conforming to the present invention has impregnated therein a phenolic resin which is at least partially sulfo- and/or sulfimethylated at the B-stage.

Hitherto, adjustment of curing and drying conditions to put the phenolic resin at the B-stage has been very difficult. If adjustment of the curing and drying conditions is even slightly inadequate, the phenolic resin may stay at the A-stage or proceed to the C-stage (i.e., go beyond the B-stage).

In the present invention, the problem described, which is quite serious, is solved in a manner that the prior art neither discloses nor suggests, by including a sulfo- and/or sulfimethylating phenolic resin in the material as defined in independent claims 1 and 14.

In the case where the phenolic resin is sulfo- and/or sulfimethylated, the tolerance for curing and drying conditions required to put the phenolic resin at the B-stage becomes wide so that finding the right combination of curing and drying conditions becomes very easy.

The Office action states in a passage near the bottom of page 7 that a recitation of method steps in a claim directed to a product does not patentably distinguish the product from a product disclosed in the prior art "unless it can be shown that the claimed method inherently results in a materially different product."

It is respectfully submitted that the two exhibits previously of record and mentioned above, plus Exhibit A submitted herewith, make that very showing: products in accordance with the invention *are* materially different from the controls to which they are compared.

The remaining art relied upon does not make up for the deficiencies of the documents discussed above as a disclosure or suggestion of the present invention.

The Casadevall patent discloses fibers in which high temperature phenolic resin is impregnated and partially cured to the B-stage to facilitate handling. While this reference discloses pre-impregnated fibers, it does not disclose porous material to be molded as in the present invention and further does not disclose adding an aldehyde and/or aldehyde donor together with a phenolic resin. In the present invention, aldehyde and/or aldehyde donor is(are) added in the phenolic resin so that after molding phenolic resin at the B-stage in the molded material is completely cured to have good dimensional stability and heat resistance

(see page 19 line 32 to page 20 line 1). It should be noted that this reference does not concern "molding."

The Benzinger patent discloses a punchable printed circuit board base laminate formed by laminating thermosetting resin impregnated woven glass fiber sheet. The thermosetting resin is epoxy resin (column 2 line 68 to 69); no phenolic resin is disclosed as thermosetting resin impregnated in woven glass fiber sheet.

The Franz reference discloses a formed substrate comprising a web of fibers. The substrate is coated with a coating of a condensation polymer of formaldehyde with cresol or phenol. The patent discloses a formed substrate in which phenol formaldehyde and cresol formaldehyde resin solutions are impregnated. This reference does not disclose that the resin is at B-stage.

The Burke reference discloses a corrugated cellulosic sheet member containing aminoplast containing phenol-aldehyde resin system or modified phenol-aldehyde resin system. The phenol-aldehyde resins are not at B-stage.

In short, the art of record, whether considered in the several combinations proposed in the Office action or in other combinations, simply would not have led a person of ordinary skill in the art to the present invention.

It is always easy in hindsight to look for the features of a claimed invention in isolation and construct a rationale for their combination in just the way proposed by the inventors in an application for a patent. But as the examiner knows, hindsight is not to be applied in assessing patentability. The examiner must put himself or herself in the position of a person of ordinary skill in the art at the time the invention was made. This mental exercise,

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while not easy, is essential. From such a perspective, a patent for the present invention as defined in the claims as resubmitted is clearly warranted.

For the reasons stated, it is respectfully requested that the examiner withdraw the outstanding rejections and issue a notice of allowance.

Respectfully submitted,  
COOPER & DUNHAM, LLP

A handwritten signature in cursive script, appearing to read "Donald S. Dowden".

Donald S. Dowden  
Reg. No. 20,701